$$LithiumThickness\,Removal Rate = 2.17\times10^{-16}\cdot LithiumInfluxRate(atoms/cm^2 s)$$

{14}

with the resulting units of nm/sec. The lithium influx rate shown in FIG. 11 converts to a required lithium thickness sputter rate, shown in FIG. 12, for the same 1-4 droplet sizes, repetition rate and duty cycle

. This result further highlights the need for a small droplet size and a large mirror radius. Otherwise, the required sputter rate can become impractical.

The required thickness sputter rate for lithium, can be compared to the maximum allowed thickness sputter rate for molybdenum, e.g., for a 1 year collector lifetime. The data in FIG. 12 divided into the maximum allowed molybdenum sputter rate, 1.75×10^{-5} nm/sec is shown in FIG.13 for the same 1-4 droplet sizes, repetition rate and duty cycle

. The question is what is needed to create a molybdenum sputter rate 4 or more orders of magnitude less than the lithium sputter rate. The sputter yield for lithium and molybdenum when attacked by helium ions is discussed, e.g., in W. Eckstein, "Calculated Sputtering, Reflection and Range Values", ~~[citation to publication?]~~ published on ~~,~~ June 24, 2002. This sputter yield data versus ion energy is shown in FIG. 14 along with data for silicon for ion energies of (3) lithium into Mo at Eth=52.7 eV, (2) helium into Si at Eth=10.1 eV and (1) helium into Li. As one can see, a properly chosen helium ion energy will result in acceptable lithium sputter yield and essentially no molybdenum sputter yield. A problem can arise, however, from the fact that one cannot control the incident ion energy perfectly. That is, the energy spectrum of incident helium ions is not a delta function. It is the spread of ion energies that must be assessed when determining the deferential sputtering between lithium and molybdenum.

There are examples in the literature of RF Induction (RFI) plasmas which create, e.g., an ion energy distribution that is Gaussian shaped with, e.g., a FWHM of 2.5 eV as discussed, e.g., in J. Hopwood, "Ion Bombardment Energy Distributions in a Radio Frequency Induction Plasma," Applied Physics Letters, Vol 62, No. 9 (March 1, 1993), pp 940-942.

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